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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MERKLING, MATTHEW J	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/533,667	ISHIKAWA ET AL.	
	Examiner	Art Unit	
	MATTHEW J. MERKLING	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/3/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2, 14, 15, 17, 18 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 2 recites the broad recitation "said at least one incombustibles discharging portion", and the claim also recites two incombustibles discharging portion" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 6, 7, 9, 10, 12 and 14-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohshita et al. (US 5,138,982).

Regarding claim 1, Ohshita discloses a fluidized-bed gasification furnace for gasifying combustibles (Figs. 1, 2, 4 and 13), comprising:

a fluidized bed (16, 35, 94) having a substantially rectangular horizontal cross section (col. 20 lines 12-23), a circulating flow of a fluidized medium being formed in said fluidized bed (fluidized bed, see Figs. 1, 2, 4 and 13), and combustibles supplied to said fluidized bed (via conduits 3, 33, 66) being gasified in said circulating flow of the fluidized medium to produce gas and char; and

at least one incombustibles discharging portion (such as 4, 37, 69) defined at at least one side of said fluidized bed for discharging the fluidized medium and incombustibles accompanying the fluidized medium (see Figs. 1, 2, and 4), said at least one incombustibles discharging portion being disposed at the lower end of said fluidized bed(see Figs. 1, 2, and 4).

Regarding claim 2, Ohshita further discloses said at least one incombustibles discharging portion comprises two incombustibles discharging portions at a pair of facing sides of said fluidized bed (37 and 69, see Figs. 2 and 4).

Regarding claims 3 and 14, Ohshita further discloses said fluidized bed is surrounded by furnace walls having a substantially rectangular inner surface in horizontal cross section (col. 20 lines 12-23).

Regarding claims 4 and 15-17, Ohshita further discloses said incombustibles discharging portion is provided below a central portion of said fluidized bed (see Figs. 1, 2 and 4).

Regarding claim 6, Ohshita further discloses an apparatus for forming said circulating flow of the fluidized medium comprises a fluidized-bed bottom inclined toward said incombustibles discharging portion (see Figs. 1, 2 and 4), and a fluidizing gas supplying apparatus (5, 6, 7 in Fig. 1, 25, 26, 27 in Fig. 2, 54, 55, 56 in Fig. 4) for supplying fluidizing gases.

Regarding limitations recited in claim 6 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Regarding claim 7, Ohshita further discloses said apparatus for forming said circulating flow of the fluidized medium further comprises a deflector (col. 2 lines 3-7).

Regarding claim 9, Ohshita further discloses a vertical chute (17) having a fixed length which is substantially vertically disposed and communicates with said incombustibles discharging portion (see Fig. 1); and

an incombustibles discharging apparatus (18) for discharging the incombustibles from said fluidized-bed gasification furnace, said incombustibles discharging apparatus being provided below said vertical chute to communicate with said vertical chute (see Fig. 1).

Regarding claim 10, Ohshita further discloses said incombustibles discharging apparatus discharges the incombustibles horizontally (auger, see Fig. 1).

Regarding claim 12, Ohshita further discloses a slagging combustion furnace for combusting the gas and char produced in said fluidized-bed gasification furnace and melting ash (col. 6 lines 27-36).

5. Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Etnestad et al. (US 4,303,022).

Regarding claim 11, Etnestad discloses a fluidized-bed gasification furnace for gasifying combustibles (see abstract), comprising:

a fluidized-bed having a substantially rectangular horizontal cross section; and a freeboard having a substantially circular horizontal cross section (see col. 1 line 66 – col. 2 line 6),

wherein a circulating flow of a fluidized medium is formed in said fluidized bed (inherently in fluidized bed).

Regarding limitations recited in claim 11 which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshita et al. (US 5,138,982) as applied to claim 1 above.

Regarding claim 8, Ohshita, as discussed in claim 1 above, further discloses a fluidized-bed bottom is inclined toward said incombustibles discharging portion (see inclining sections 2, 22 and 52) and has an end portion connected to said incombustibles discharging portion (see Figs. 1, 2 and 4).

Ohshita teaches that the angle of said inclination is a variable that varies between 10 and 60 degrees and has the effect of influencing the fluidizing state of the fluidizing medium as well as the amount of grains introduced into the thermal energy recovery chambers (col. 10 lines 53-68). Ohshita, however, does not explicitly disclose said inclination at 45 degrees.

As such, it was well known in the art at the time of the invention that the inclination of the fluidized bed bottom has significant effect on the fluidizing state of the fluidizing medium as well as the amount of grains introduced into the thermal energy recovery chambers (as disclosed by Ohshita, col. 10 lines 53-68). Therefore, the inclination of the fluidized bed bottom is not considered to confer patentability to the claim, as the angle of inclination is a variable that can be modified, as is taught by Ohshita, to influence the fluidizing state of the fluidizing medium as well as the amount of grains introduced into the thermal energy recovery chambers. The angle of inclination would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed angle of inclination cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the angle of inclination in Ohshita to obtain the desired fluidizing state of the fluidizing

medium as well as the amount of grains introduced into the thermal energy recovery chambers (In re Boesch, 617 F. 2d. 272,205 USPQ 215 (CCPA 1980)). Since it has been held that where general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (In re Aller, 105 USPQ 223).

9. Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshita et al. (US 5,138,982) in view of Naito et al. (US 5,178,531).

Regarding claim 11, Ohshita discloses a fluidized-bed gasification furnace for gasifying combustibles (see abstract), comprising:

a fluidized-bed having a substantially rectangular horizontal cross section (col. 20 lines 12-23); and a freeboard (see Figs. 1, 2 and 4),

wherein a circulating flow of a fluidized medium is formed in said fluidized bed (inherently in fluidized bed), and combustibles supplied to said fluidized bed are gasified to generate gas and char (see abstract).

Ohshita teaches a fluidized bed and freeboard both having the same cross sectional shape (either circular or rectangular, col. 20 lines 12-23), does not explicitly teach a freeboard with a circular cross section and a fluidized bed with a square cross sectional area. It is also noted that Ohshita teaches that a circular cross sectional shape is preferred when the vessels are of a larger shape. In other words, Ohshita discloses smaller vessels can be of rectangular shape, while larger ones should be of circular shape due to ease of manufacture (col. 20 lines 12-23).

Naito also discloses a fluidized bed furnace that comprises a fluidized bed along with a freeboard (see abstract).

Naito teaches a fluidized bed furnace that comprises a freeboard with a larger diameter than the fluidized bed portion in order to decrease the velocity of the fluidizing gas ascending through the freeboard section and prevent scattering of the fluidizing material (col. 1 lines 16-27).

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the larger freeboard portion of Naito, to the rectangular furnace of Ohshita in order to decrease the velocity of the fluidizing gas ascending through the freeboard section and prevent scattering of the fluidizing material. Furthermore, now that modified Ohshita has a larger freeboard section, it would have been obvious to one of ordinary skill in the art at the time of the invention to change the shape of the freeboard section of Ohshita from rectangular to circular in order to facilitate the manufacture of the larger vessels.

Regarding claim 13, Ohshita further discloses a slagging combustion furnace for combusting the gas and char produced in said fluidized-bed gasification furnace and melting ash (col. 6 lines 27-36).

10. Claims 5 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshita et al. (US 5,138,982) as applied to claims 1, 2, 3 and 14 above, and further in view of Naito et al. (US 5,178,531).

Regarding claims 5 and 18-20, Ohshita teaches a fluidized bed and freeboard both having the same cross sectional shape (either circular or rectangular, col. 20 lines 12-23), does not explicitly teach a freeboard with a circular cross section and a fluidized bed with a square cross sectional area. It is also noted that Ohshita teaches that a circular cross sectional shape is preferred when the vessels are of a larger shape. In other words, Ohshita discloses smaller vessels can be of rectangular shape, while larger ones should be of circular shape due to ease of manufacture (col. 20 lines 12-23).

Naito also discloses a fluidized bed furnace that comprises a fluidized bed along with a freeboard (see abstract).

Naito teaches a fluidized bed furnace that comprises a freeboard with a larger diameter than the fluidized bed portion in order to decrease the velocity of the fluidizing gas ascending through the freeboard section and prevent scattering of the fluidizing material (col. 1 lines 16-27).

As such, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the larger freeboard portion of Naito, to the rectangular furnace of Ohshita in order to decrease the velocity of the fluidizing gas ascending through the freeboard section and prevent scattering of the fluidizing material. Furthermore, now that modified Ohshita has a larger freeboard section, it would have been obvious to one of ordinary skill in the art at the time of the invention to change the shape of the freeboard section of Ohshita from rectangular to circular in order to facilitate the manufacture of the larger vessels.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. MERKLING whose telephone number is (571)272-9813. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. J. M./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795